

Key to Diptera Families (Larvae)

1. Body appears to have 7 segments with deep constrictions between segments (Fig. 13.2); segments 1-6 with ventral suckers (Fig. 13.2).....**Blephariceridae p. 174**

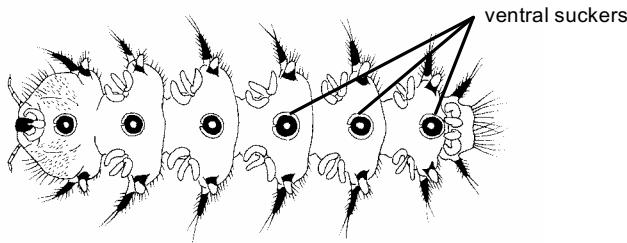


Figure 13.2: *Philorus californicus*
(Blephariceridae) larva,
Ventral View.

- 1'. Ventral suckers absent from abdominal segments 1-6.....2

- 2(1'). Body flattened dorsoventrally; integument (skin) leathery; most of head capsule visible (Fig. 13.3); long setae usually present along posterior margin (Fig. 13.3).....
.....**Stratiomyidae p. 182**

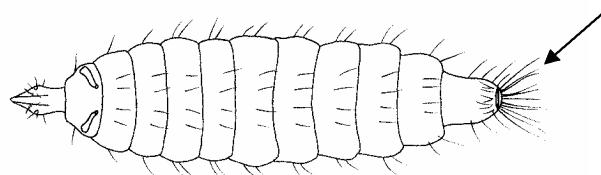


Figure 13.3: *Euparyphus* sp.
(Stratiomyidae) larva, Dorsal View.

- 2'. Body cylindrical; integument not leathery; head capsule variable; long setae may or may not be present along posterior margin.....3

3(2'). Head capsule fully visible and completely separated from thorax (Figs. 13.4, 13.5).....4

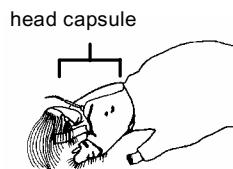


Figure 13.4: Anterior end of *Simulium venustum* (Simuliidae) larva, Lateral View.

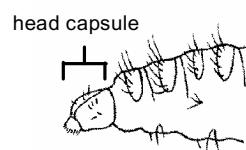


Figure 13.5: Anterior end of *Pericoma* sp. (Psychodidae) larva, Lateral View.

3'. Head capsule absent or retracted into thorax (Figs. 13.6, 13.7) 14

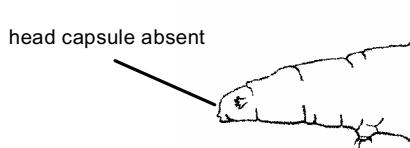


Figure 13.6: Anterior end of *Ephydra* sp. (Ephydriidae) larva, Lateral View.

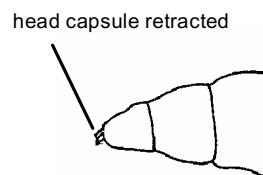


Figure 13.7: Anterior end of *Tipula abdominalis* (Tipulidae) larva, Lateral View.

4(3). Prolegs present (either on prothorax, at terminal end of body and prothorax, or on abdomen) (Figs. 13.8, 13.9, 13.10, 13.11) 5

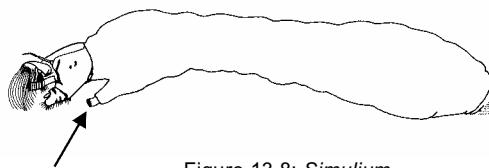


Figure 13.8: *Simulium venustum* (Simuliidae) larva, Lateral View.

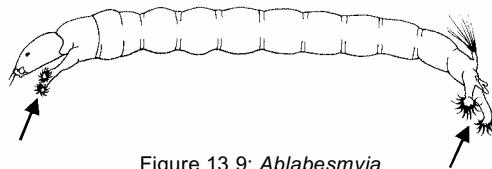


Figure 13.9: *Ablabesmyia* sp. (Chironomidae) larva, Lateral View.

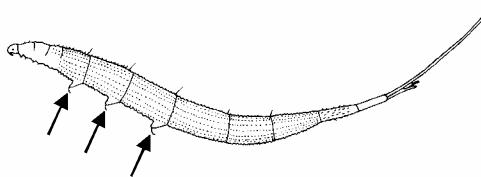


Figure 13.10: *Bittacomorpha clavipes* (Ptychopteridae) larva, Lateral View.

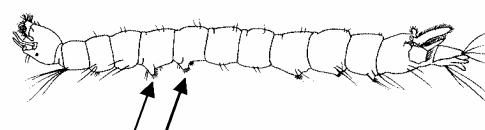


Figure 13.11: *Dixella* sp. (Dixidae) larva, Lateral View.

4'. Prolegs absent (Figs. 13.12, 13.13) 10

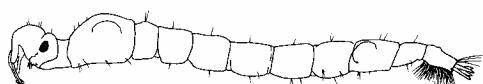


Figure 13.12: *Chaoborus* sp. (Chaoboridae) larva, Lateral View.



Figure 13.13: *Pericoma* sp. (Psychodidae) larva, Lateral View.

5(4). Prolegs present on prothorax (Fig. 13.14), at terminal end of body, or both (Fig. 13.15).. 6

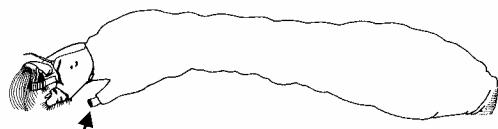


Figure 13.14: *Simulium venustum*
(*Simuliidae*) larva, Lateral View.

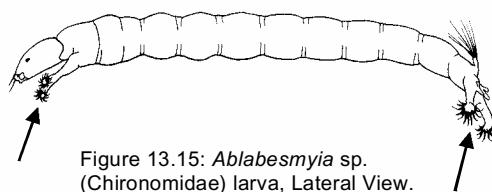


Figure 13.15: *Ablabesmyia* sp.
(*Chironomidae*) larva, Lateral View.

5'. Prolegs absent from prothorax and terminal end of body; prolegs only present on abdomen (Figs. 13.16, 13.17) 9

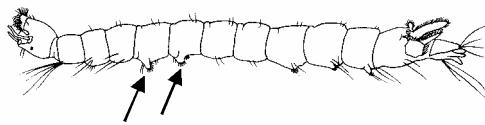


Figure 13.16: *Dixella* sp.
(*Dixidae*) larva, Lateral View.

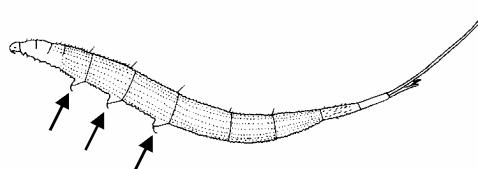


Figure 13.17: *Bittacomorpha clavipes*
(*Ptychopteridae*) larva, Lateral View.

6(5). Prolegs only at terminal end of body (absent from prothorax) (Fig. 13.18)
..... **Ceratopogonidae (in part) p. 175**

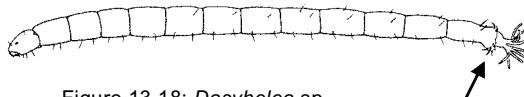


Figure 13.18: *Dasyhelea* sp.
(*Ceratopogonidae*) larva, Lateral View.

6'. Prolegs either present only on prothorax (Fig. 13.19) or on both prothorax and terminal end of body (Fig. 13.20)..... 7

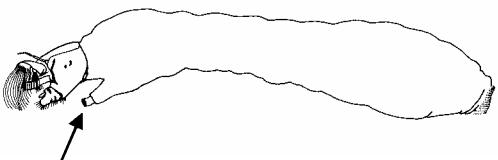


Figure 13.19: *Simulium venustum*
(*Simuliidae*) larva, Lateral View.

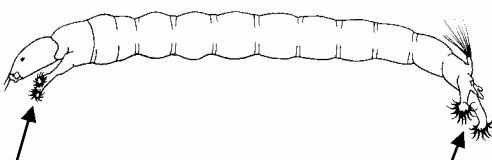


Figure 13.20: *Ablabesmyia* sp.
(*Chironomidae*) larva, Lateral View.

- 7(6'). Prolegs only on prothorax (Fig. 13.21); posterior third of abdomen swollen (Fig. 13.21); abdomen terminates in a single ring of hooks **Simuliidae p. 181**

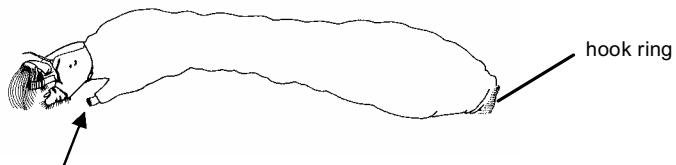


Figure 13.21: *Simulium venustum*
(Simuliidae) larva, Lateral View.

- 7'. Prolegs present on both prothorax and terminal end of body (Figs. 13.22, 13.23); posterior third of abdomen not swollen (Figs. 13.22, 13.23); abdomen not terminating in a single ring of hooks although rings of hooks may be present at the end of prolegs.....8

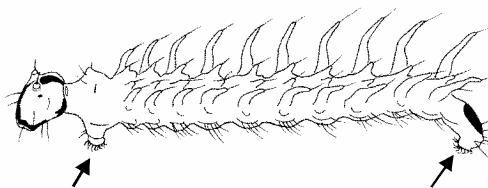


Figure 13.22: *Atrichopogon* sp.
(Ceratopogonidae) larva, Lateral View.

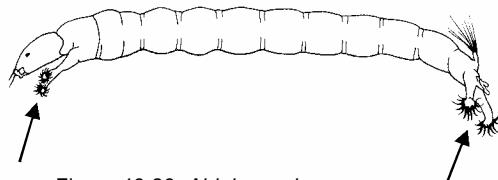


Figure 13.23: *Ablabesmyia* sp.
(Chironomidae) larva, Lateral View.

- 8(7'). Segments with fleshy protuberances or long setae (Fig. 13.24).....
..... **Ceratopogonidae (in part) p. 175**

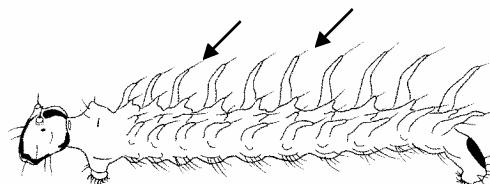


Figure 13.24: *Atrichopogon* sp.
(Ceratopogonidae) larva, Lateral View.

- 8'. Segments lacking fleshy protuberances and long setae although short setae may be present (Figs. 13.25, 13.26) **Chironomidae p. 176**

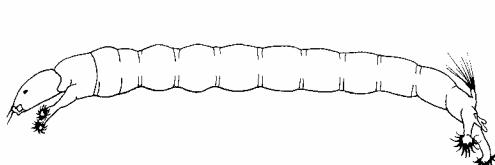


Figure 13.25: *Ablabesmyia* sp.
(Chironomidae) larva, Lateral View.

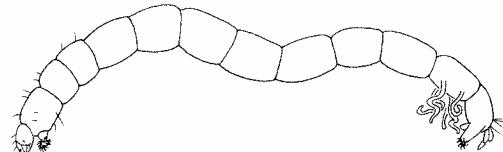


Figure 13.26: *Chironomus tentans*
(Chironomidae) larva, Lateral View.

- 9(5'). Prolegs on abdominal segments 1-2 (Fig. 13.27); abdomen terminating in two lobes fringed with setae (Fig. 13.28) **Dixidae p. 177**

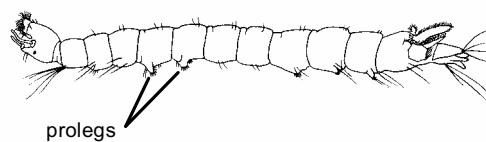


Figure 13.27: *Dixella* sp.
(Dixidae) larva, Lateral View.

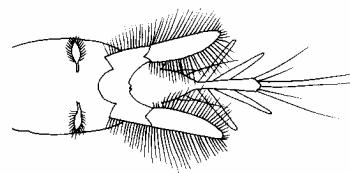


Figure 13.28: Apex of
abdomen of *Dixa* sp.
(Dixidae) larva, Lateral View.

- 9'. Prolegs on abdominal segments 1-3 (Fig. 13.29); abdomen terminating in a long respiratory tube (Fig. 13.29) **Ptychopteridae (in part) p. 180**

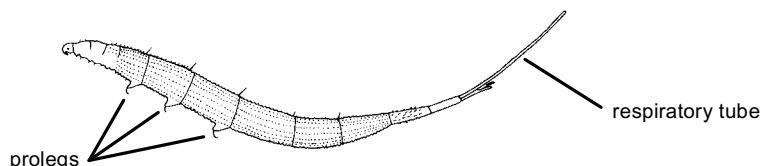


Figure 13.29: *Bittacomorpha clavipes*
(Ptychopteridae) larva, Lateral View.

- 10(4'). Thoracic segments fused and swollen (thicker than abdomen) (Figs. 13.30, 13.31) 11

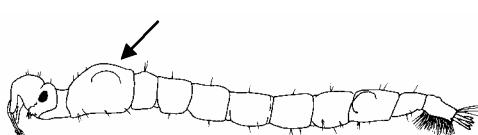


Figure 13.30: *Chaoborus* sp.
(Chaoboridae) larva, Lateral View.

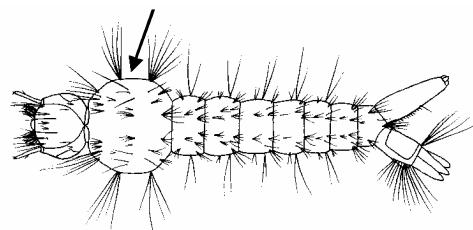


Figure 13.31: Culicidae larva,
Dorsal View.

- 10'. Thoracic segments not fused and not swollen 12

11(10). Antennae terminating in long setae (Fig. 13.32).....**Chaoboridae p. 175**

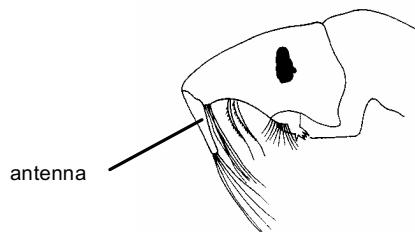


Figure 13.32: Head of *Chaoborus punctipennis* (Chaoboridae) larva, Lateral View.

11'. Antennae not terminating in long setae (only short setae present) (Fig. 13.33)
.....**Culicidae p. 177**

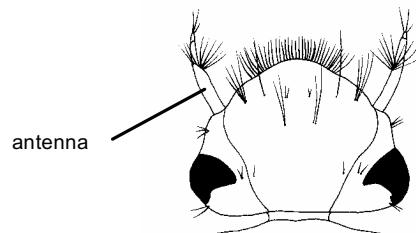


Figure 13.33: Head of *Aedes stimulans* (Culicidae) larva, Dorsal View.

12(10'). Abdomen terminating in a long respiratory tube (Fig. 13.34)
.....**Ptychopteridae (in part) p. 180**

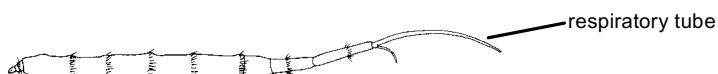


Figure 13.34: *Ptychoptera* sp.
(Ptychopteridae) larva, Lateral View.

12'. Abdomen not terminating in a long respiratory tube (Figs. 13.35, 13.36) 13



Figure 13.35: *Pericoma* sp.
(Psychodidae) larva, Lateral View.



Figure 13.36: *Bezzia* sp.
(Ceratopogonidae) larva, Lateral View.

- 13(12'). Body segments with 2-3 secondary divisions (annuli) (Fig. 13.37); body grey or brown.....
**Psychodidae p. 180**



Figure 13.37: Psychodidae larva, Lateral View.

- 13'. Body segments not secondarily divided (Fig. 13.38); body white or off-white.....
**Ceratopogonidae (in part) p. 175**



Figure 13.38: *Bezzia* sp.
 (Ceratopogonidae) larva, Lateral View.

- 14(3'). Much of rounded head capsule present (sometimes reduced to only a few rods) (Fig. 13.39); mandibles moving against each other on a horizontal plane (Fig. 13.39) – note: to see head the sides of the thorax must often be cut to reveal retracted head.....**Tipulidae p. 183**



Figure 13.39: Head capsule of
Dicranota sp. (Tipulidae) larva,
 Ventral View.

- 14'. Head capsule lacking or much reduced (Fig. 13.40); mandibles moving parallel to each other on a vertical plane (Fig. 13.40)15

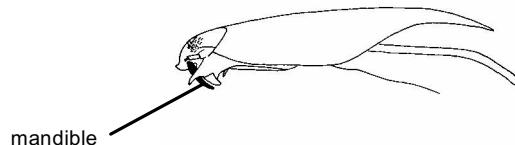


Figure 13.40: Head capsule of
Tabanus reinwardtii (Tabanidae)
 larva, Lateral View.

- 15(14'). Abdomen terminating in a long respiratory tube that is at least half as long as body (Figs. 13.41, 13.42) 16

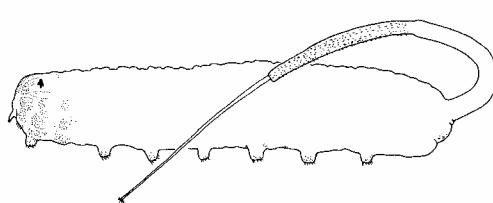


Figure 13.41: *Eristalis tenax*
(Syrphidae) larva, Lateral View.

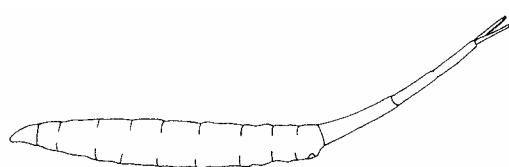


Figure 13.42: *Paracoenia bisetosa* (Ephydriidae) larva,
Lateral View.

- 15'. Abdomen not terminating in a long respiratory tube that is at least half as long as body, although shorter tubes and projections may be present 17

- 16(15). Anterior end blunt; tail not forked posteriorly (Fig. 13.43) **Syrphidae p. 182**

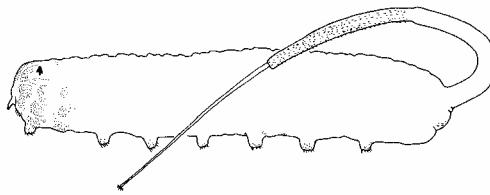


Figure 13.43: *Eristalis tenax*
(Syrphidae) larva, Lateral View.

- 16'. Anterior end tapering; tail sometimes forked posteriorly (Fig. 13.44) **Ephydriidae (in part) p. 179**

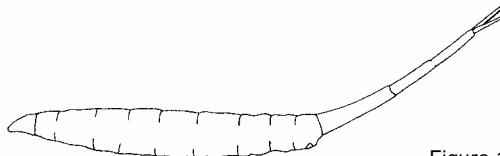


Figure 13.44: *Paracoenia bisetosa* (Ephydriidae) larva,
Lateral View.

- 17(15'). Body wrinkled; many segments with rings of tubercles (Fig. 13.45); posterior segment with spiracles surrounded by lobes (Fig. 13.46) **Sciomyzidae p. 181**

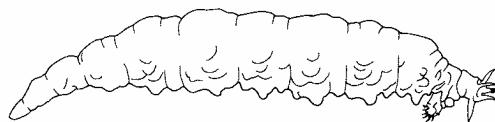


Figure 13.45: *Hedria* sp.
(Sciomyzidae) larva, Lateral View.

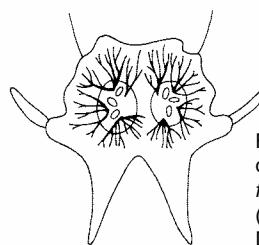


Figure 13.46: Spiracular disc of *Sepedon f. fuscipennis*
(Sciomyzidae) larva, Dorsal View.

- 17'. Not as above 18

- 18(17'). Distinct prolegs present and terminating in rows or clusters of hooks or spines (Figs. 13.47, 13.48).....19

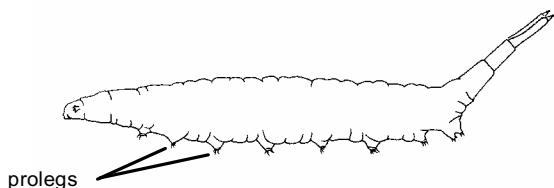


Figure 13.47: *Ephydra* sp.
(Ephydriidae) larva, Lateral View.

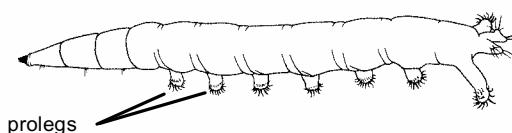


Figure 13.48: *Hemerodromia* sp.
(Empididae) larva, Lateral View.

- 18'. Distinct prolegs absent (welts covered in setae sometimes present) (Figs. 13.49, 13.50).22

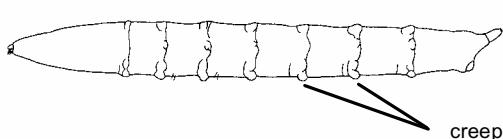


Figure 13.49: *Tabanus reinwardtii*
(Tabanidae) larva, Lateral View.

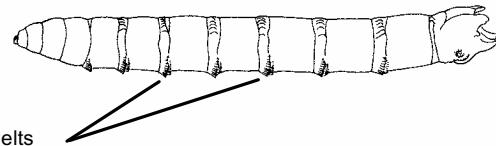


Figure 13.50: *Rhaphium campestre*
(Dolichopodidae) larva, Lateral View.

- 19(18). Abdomen terminating in 2 lobes fringed with setae (Fig. 13.51); terminal processes longer than prolegs (Fig. 13.51)Athericidae **p. 174**

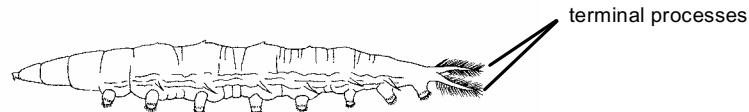


Figure 13.51: Athericidae larva,
Lateral View.

- 19'. Terminal processes not as above although scattered setae may be present on terminal processes; terminal processes usually longer than prolegs20

- 20(19'). Head discernible with visible antennae and palpi; body usually terminating in 1-4 lobes bearing setae and with abdominal prolegs present (Fig. 13.52) - note: *in some cases posterior end bulbous with inconspicuous terminal processes and only welts present*.....
.....**Empididae p. 178**

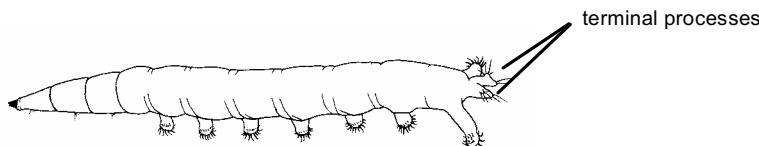


Figure 13.52: *Hemerodromia* sp.
(Empididae) larva, Lateral View.

- 20'. Head not discernible; terminal processes absent or variously shaped 21

- 21(20'). Abdomen terminating in a pair of short respiratory tubes (shorter than posterior prolegs) (Fig. 13.53).....**Muscidae p. 179**

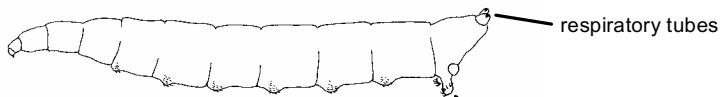


Figure 13.53: *Limnophora* sp.
(Muscidae) larva, Lateral View.

- 21'. Abdomen terminating in a variety of lobes or processes; posterior prolegs absent or prolegs shorter than respiratory tubes (Fig. 13.54).....**Ephydriidae (in part) p. 179**

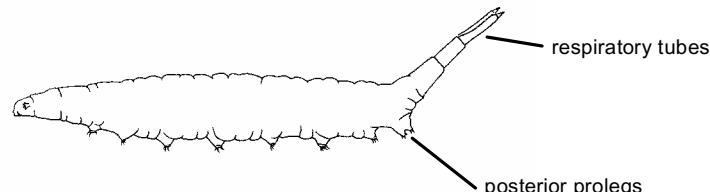


Figure 13.54: *Ephydra* sp.
(Ephydriidae) larva, Lateral View.

- 22(18'). Both ends tapering (Fig. 13.55); terminal processes absent; segments ringed by welts (fleshy lumps covered in setae) (Fig. 13.55).....**Tabanidae p. 183**

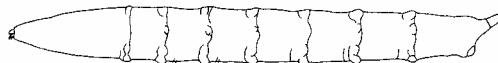


Figure 13.55: *Tabanus reinwardtii*
(Tabanidae) larva, Lateral View.

- 22'. Terminal processes present; welts present or absent, if present only ventrally 23

- 23(22'). Abdomen terminating in 4 lobes (Fig. 13.56); posterior segments bare.....
..... **Dolichopodidae p. 178**



Figure 13.56: *Rhaphium campestre*
(Dolichopodidae) larva, Lateral View.

- 23'. Abdomen not terminating 4 lobes (Fig. 13.57); posterior segments covered in fine setae,
spines, or tubercles bearing setae..... **Ephydriidae (in part) p. 179**

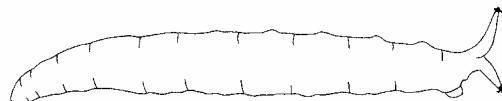


Figure 13.57: *Scatella hawaiiensis*
(Ephydriidae) larva, Lateral View.